

**Claims:**

1. A method of analyzing network characteristics comprising the steps of:  
    querying a network element in a communication network for local  
network information;  
5       receiving the local network information from the network element in  
response to querying, the local network information comprising one or more  
items selected from the group including topology information, connection  
information, and performance information;  
    analyzing the local network information received to map a  
10   communication path established in the network;  
    responsive to the local network information received and the  
communication path mapped in the analyzing step, selecting a next network  
element for querying; and  
    if the next network element has been selected, iterating the method from  
15   the querying step for the next network element.
2. The method as defined in claim 1 further comprising the step of receiving a  
notification signal from one or more network elements, the notification signal  
indicative of a network event, and wherein the step of querying is initiated in  
20   response to receiving said notification signal.
3. The method as defined in claim 1 further comprising the step of determining  
network capacity using communication path data from the analyzing step.
- 25   4. The method as defined in claim 1 further comprising the step of determining  
network performance using the communication path data from the analyzing  
step.
- 30   5. The method as defined in claim 1 further comprising the step of detecting  
network faults using communication path data from the analyzing step.
6. The method as defined in claim 1 wherein the topology information includes

a routing table and wherein the connection information includes a connection table.

7. A computer readable medium storing a software program that, when  
5 executed by a computer, causes the computer to perform a method comprising the steps of:

querying a network element in a communication network for local network information;

10 receiving the local network information from the network element in response to querying, the local network information comprising one or more items selected from the group including topology information, connection information, and performance information;

analyzing the local network information received to map a communication path established in the network;

15 responsive to the local network information received and the communication path mapped in the analyzing step, selecting a next network element for querying; and

if the next network element has been selected, iterating the method from the querying step for the next network element.

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8. The computer readable medium as defined in claim 7 further comprising the step of receiving a notification signal from one or more network elements, the notification signal indicative of a network event, and wherein the step of querying is initiated in response to receiving said notification signal.

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9. The computer readable medium as defined in claim 7 further comprising the step of determining network capacity using communication path data from the analyzing step.

30 10. The computer readable medium as defined in claim 7 further comprising the step of determining network performance using communication path data from the analyzing step.

11. The computer readable medium as defined in claim 7 further comprising the step of detecting network faults using communication path data from the analyzing step.

5 12. The computer readable medium as defined in claim 7 wherein the topology information includes a routing table and wherein the connection information includes a connection table.

13. A method for analyzing network characteristics comprising the steps of:  
10 receiving a notification signal from a network element, said notification signal indicative of a new communication path set-up by the network element and including circuit identifier information;  
querying a network element in a communication network for connection information;  
15 receiving the connection information from the network element in response to querying;  
comparing the connection information with the circuit identifier information to determine a match condition;  
if the match condition occurs in the comparing step, querying the  
20 network element for routing information;  
receiving routing information from the network element;  
analyzing the routing information received to map the new communication path established in the network;  
selecting a next network element to query along the new communication  
25 path;  
if the next network element has been selected, fetching from the received circuit identifier information associated with the next network element and iterating the method from the step of querying for the next network element.

30 14. The method as defined in claim 1 further including the step of storing the communication path established through the communication network.

15. The computer readable medium as defined in claim 7 further including the step of storing the communication path established through the communication network.

5 16. The method as defined in claim 13 further including the step of storing the communication path established through the communication network.

17. Apparatus for analyzing network characteristics in a network including a plurality of network elements interconnected together to form a communication  
10 network, the apparatus comprising:

means for querying a network element in the communication network for local network information, the local network information comprising one or more items selected from the group including topology information, connection information, and performance information;

15 means, responsive to receipt of the local network information, for analyzing the local network information received to map a communication path established in the network; and

means, responsive to the local network information received and the communication path mapped in the analyzing means, for selecting a next  
20 network element for querying;

wherein the means for querying is responsive to a notification that the next network element has been selected.

18. The apparatus as defined in claim 17 wherein the querying means further  
25 comprises means for receiving a notification signal from one or more network elements, the notification signal indicative of a network event, and wherein the querying means is responsive to receiving said notification signal.

19. The apparatus as defined in claim 17 further comprising means for  
30 determining network capacity using the communication path from the analyzing means.

20. The apparatus as defined in claim 17 further comprising means for

determining network performance using the communication path from the analyzing means.

21. The apparatus as defined in claim 17 further comprising means for  
5 detecting network faults using the communication path from the analyzing means.

22. The apparatus as defined in claim 17 wherein the topology information  
includes a routing table and wherein the connection information includes a  
10 connection table.